

eastern Gulf of Mexico. These lows rapidly advanced and joined as one cyclone at approximately  $41^{\circ}$  N.,  $61^{\circ}$  W., within 24 hours and this moved to  $45^{\circ}$  N.,  $44^{\circ}$  W., in another 24 hours. Thence the storm turned toward the north-northeast. Numerous reports of gales due to this low have been received and the lowest Atlantic vessel barometer reading, mentioned above, was noted near its center.

The next of the important storms was located over Michigan on the evening of the 14th and near northeastern New England on the morning of the 16th, after which it moved slowly northward. Among reports of high winds noted in connection with this low was one of hurricane force (12) met by the U. S. cutter *Cayuga* some distance east of the Maine coast. A veteran vessel captain of Chesapeake Bay rated this storm as the worst experienced in 35 years. The Italian steamship *Fidelitas*, from Casablanca bound for New Orleans, suffered so much injury between Hatteras and Bermuda that the captain turned into Norfolk for repairs.

The third intense storm apparently developed over the western Gulf of Mexico, where its center was noted on the 22d, about 200 miles east of Tampico. The morning of the 23d found this storm over northwestern Florida. The British schooner *Gloria Colita*, which had left Mobile bound southward, on the 21st, was found many days later unmanned and greatly damaged, presumably from encountering the high winds of this cyclone.

By the morning of the 24th the storm was central near Cape Hatteras, very intense, and affecting a large ocean area. Chart XIV indicates the conditions of 7 a. m. (E. S. T.) of that date. The American steamships *Cities Service Koolmotor* and *Henry S. Grove* met winds of hurricane strength off the middle Atlantic coast of the United States this day. The Finnish steamship *Olovsborg*, out from Norfolk the 22d for the Panama Canal and Japan, lost one member of the crew while four others suffered severe injuries, and all the lifeboats were lost, so the vessel returned to Norfolk for extensive repairs. The low moved rapidly out to the east-northeastward after the morning of the 24th, but intense winds were noted to and somewhat beyond the 60th meridian.

Elsewhere in this REVIEW is mention of some features of

norther weather met on the 19th and 20th over the south-central Gulf of Mexico by the American steamship *Antinous*.

*Snow squall over Gulf of Mexico.*—At about the same time as the norther just mentioned, a fall of snow, lasting about half an hour, was noted off the southeastern coast of Louisiana, in a latitude where snow at sea is of very unusual occurrence. The vessel was the American steamship *Walter Jennings*, Charles Warner, master, bound from Key West to Galveston. The position and time of the snowfall were about  $28^{\circ}$  N.,  $91^{\circ}$  W., January 20, 10 a. m.

*Ice in coastal waters.*—In the harbors, navigable rivers, bays, and sounds of the eastern coast of the United States, as far south as North Carolina, vessels had much trouble with ice during the month, particularly during the second half.

*Fog.*—Over the main part of the North Atlantic there was exceedingly little fog, as far as reports now at hand indicate. The Grand Banks region seems to have had fog on but 1 day, the 20th, and then over only a small portion. Similarly, near the coast of the North American continent from Nova Scotia to Sandy Hook reports show but little fog.

To southward of Sandy Hook, the waters near the coast, as far as Galveston Bay, had almost everywhere more fog than usual. Observers on many vessels, particularly near the coasts of the Carolinas, commented on the connection between this fog and the great temperature contrast between the very cold air coming from over the continent and the warmer air close to the sea water, especially the water of the Gulf Stream. Several observations mention the fog as only low-lying.

While the fog was rather well distributed as to area near the coasts of the Middle and South Atlantic and Gulf States, save that there was little near Florida, there was irregularity in time distribution. Unusual frequency was evident during the days 12th to 19th, inclusive, and there was scarcely any before the 6th or after the 27th.

Two of the 5°-squares,  $25^{\circ}$  to  $30^{\circ}$  N.,  $90^{\circ}$  to  $95^{\circ}$  W., and  $30^{\circ}$  to  $35^{\circ}$  N.,  $75^{\circ}$  to  $80^{\circ}$  W., had fog on 10 days each, the greatest number of any North Atlantic squares. To the northeastward, the square  $35^{\circ}$  to  $40^{\circ}$  N.,  $70^{\circ}$  to  $75^{\circ}$  W., furnished fog reports on 9 days.

#### OCEAN GALES AND STORMS, JANUARY 1940

Vessel	Voyage		Position at time of lowest barometer		Gale began Janu- ary	Time of lowest barom- eter, January	Gale ended Janu- ary	Lowest barom- eter	Direction of wind when gale began	Direction and force of wind at time of lowest barometer	Direction of wind when gale ended	Direction and highest force of wind	Shifts of wind near time of lowest barometer
	From—	To—	Latitude	Longitude									
<b>NORTH ATLANTIC OCEAN</b>			° ,	° ,									
Exhibitor, Am. S. S.	Gibraltar	New York	36 12 N.	17 54 W.	1	5a, 2	3	993.9	SW	W, 7	NW	SW, 10	SW-W.
Frode, Dan. S. S.	Norsundet	Albany	44 23 N.	61 00 W.	2	8a, 2	4	994.3	W	W, 3	W	WSW, 10	
Winkler, Pan. M. S.	Antwerp	New York	27 12 N.	57 36 W.	2	8a, 2	2	996.3	SW	SW, 10	SW	SW, 11	
Ipswich, Am. S. S.	Lisbon	do	38 42 N.	52 42 W.	2	2p, 2	2	989.2	SSW	SW, 10	WNW	SW, 10	SW-W.
Alexander Andre, Belg. M. S.	Ghent	Aruba	44 36 N.	20 18 W.	2	6p, 2	3	981.4	NNW	W, 6	WNW	NW, 10	SW-NW.
Winkler, Pan. M. S.	Antwerp	New York	38 00 N.	60 00 W.	4	8a, 4	5	1,006.1	W	8	W	W, 10	
Edam, Du. S. S.	do	do	45 36 N.	45 53 W.	2	4a, 5	5	978.2	SSE	W, 9	WNW	W, 9	SW-W.
Svanhild, Dan. S. S.	Kirkwall	Boston	48 21 N.	41 50 W.	3	10a, 5	6	965.6	S	WSW, 8	WNW	W, 10	WSW-WNW.
Aurora, Am. M. S.	Beaumont	New York	36 38 N.	74 13 W.	5	8p, 5	6	1,008.5	NW	W, 5	NW	NW, 10	W-NW.
Meanticut, Am. S. S.	Gibraltar	Baltimore	34 40 N.	61 50 W.	6	4a, 6	7	996.6	SSW	SSW, 9	NW	WNW, 10	SSW-W.
Ipswich, Am. S. S.	Lisbon	New York	39 00 N.	61 18 W.	6	1p, 6	7	984.4	SSW	NW, 11	NW	NW, 11	WNW-NW-W.
Alexander Hamilton, U. S. C. G.	On patrol out from Norfolk	41 00 N.	62 00 W.	6	1p, 6	7	988.2	NNW	NNW, 2	NNW	NNW	NW, 9	
Bronxville, Nor. M. S.	Gibraltar	Boston	32 53 N.	54 07 W.	5	4p, 6	7	1,002.0	WNW	SW, 9	NNW	W, 11	SW-NNW.
Alberta, Ital. S. S.	do	New York	33 00 N.	63 00 W.	6	4p, 6	7	1,008.3	WSW	W, 9	NW	W, 10	WSW-W.
Express, Am. S. S.	Lisbon	do	39 56 N.	58 30 W.	6	6p, 6	7	978.7	WSW	NW, 11	NW	NW, 11	W-NW.
Royal Arrow, Am. S. S.	New York	Beaumont	28 55 N.	92 10 W.	6	8p, 6	6	1,014.6	N	NE, 4	N	N, 10	NE-N.
Svanhild, Dan. S. S.	Kirkwall	Boston	45 04 N.	47 05 W.	7	12m, 7	9	962.2	NE	N, 3	NNW	NNW, 11	
Rotterdam, Du. M. S.	New York	Amsterdam	46 18 N.	37 42 W.	7	10p, 7	8	972.9	SW	SW, 9	SW	SW, 10	None.
City of Savannah, Am. S. S.	do	Savannah	33 55 N.	77 14 W.	7	4a, 8	8	1,008.5	SSE	WSW, 6	WSW	SSE, 10	SSE-WSW.
Exhibit, Am. S. S.	Gibraltar	New York	37 42 N.	33 18 W.	7	3p, 8	8	992.9	S	S, 8	W	S, 10	S-SW.
Exochorda, Am. S. S.	do	Boston	42 50 N.	38 12 W.	10	2p, 10	10	988.2	SSE	SSW, 9	WNW	SSW, 9	S-W.
Katrine Maersk, Dan. M. S.	Copenhagen	Port Arthur	51 54 N.	25 06 W.	11	10a, 11	11	1,002.7	SSW	SSW, 9	SSW	SSW, 9	
Gulfpenn, Am. S. S.	Baltimore	Corpus Christi	26 48 N.	91 42 W.	14	4p, 13	14	1,006.8	NNW	S, 3	NNW	NNW, 8	
Burgerdijk, Du. S. S.	Rotterdam	New York	48 30 N.	41 43 W.	15	6a, 15	15	992.8	NNW	WNW, 9	SSW	NNW, 9	ENE-NNW-WSW.

See footnotes at end of table.

## OCEAN GALES AND STORMS, JANUARY 1940—Continued

Vessel	Voyage		Position at time of lowest barometer		Gale began January	Time of lowest barometer, January	Gale ended January	Lowest barometer	Direction of wind when gale began	Direction and force of wind at time of lowest barometer	Direction and force of wind when gale ended	Direction and highest force of wind	Shifts of wind near time of lowest barometer
	From—	To—	Latitude	Longitude									
Cayuga, U. S. C. G.	On patrol out from Boston.		43° 42 N.	66° 48 W.	15	8p, 15—	17	Millibars * 995.3	ESE	ESE, 8	WSW	ESE, 12	ESE-SW.
Pres. Adams, Am. S. S.	Gibraltar	New York	42° 12 N.	57° 48 W.	18	8a, 18—	18	1,003.1	W	W, 6	WNW	W, 10	
Fred W. Weller, Am. S. S.	Boston	Port Arthur	29° 26 N.	93° 08 W.	18	12 m, 18—	19	1,012.2	N	NNW	NNW	NNW, 10	E-N.
Delftijk, Du. M. S.	Rotterdam	New York	47° 00 N.	40° 24 W.	21	12 m, 21—	21	992.2	S	SSW, 9	W	SSW, 9	SSW-W.
Gulf Belle, Am. S. S.	Port Arthur	Providence	26° 00 N.	79° 40 W.	23	2p, 23—	25	1,012.2	ESE	W, 6	NW	W, 9	S-W.
Aurora, Am. M. S.	Beaumont	New York	26° 16 N.	79° 51 W.	23	4p, 23—	24	1,011.9	SW	W, 6	W	W, 10	SW-W.
G. Harrison Smith, Am. S. S.	Corpus Christi	New York	30° 48 N.	77° 00 W.	23	9p, 23—	24	1,005.8	SW	W, 8	WNW	W, 10	S-W.
Hastings, Am. S. S.	Tampa	Tampa	33° 30 N.	75° 30 W.	23	3a, 24—	25	992.2	ESE	W, 10	NW	WSW, 11	W-WSW-NW.
Noreg, Nor. M. S.	Philadelphia	Beaumont	33° 10 N.	75° 10 W.	23	4a, 24—	24	994.2	ESE	WSW, 10	NW	NW, 11	WSW-WNW.
Cities Service Kool-motor, Am. S. S.	Port Arthur	Port Arthur	37° 30 N.	74° 38 W.	23	5a, 24—	24	986.1	E	NE, 12	N	E-N.	
San Bruno, Pan. S. S.	Charleston	Boston	37° 30 N.	73° 00 W.	23	8a, 24—	25	983.4	ESE	N, 8	NW	NNE, 9	E-N-NNE.
Henry S. Grove, Am. S. S.	Trinidad	do	36° 54 N.	69° 12 W.	23	12m, 24—	25	976.3	E	NE, 11	WNW	NE, 12	ENE-W-NE.
Pendrecht, Du. M. S.	Bilbao	Port Arthur	31° 03 N.	58° 34 W.	24	8p, 24—	25	1,000.2	W	SSW, 9	NW	SW, 11	S-WSW.
Monbaldo, Ital. S. S.	Lisbon	Philadelphia	33° 10 N.	60° 00 W.	24	12pm, 25—	25	992.6	S	WSW, 10	NW	WSW, 10	WSW-WNW.
Capo Noli, Ital. S. S.	Seville	St. John, N. B.	36° 42 N.	57° 06 W.	24	4a, 25—	25	988.2	SSW	WSW, 10	NW	WSW, 10	WSW-WNW.
Excalibur, Am. S. S.	Gibraltar	New York	39° 38 N.	47° 06 W.	28	2p, 29—	30	1,003.1	SE	W, 7	W	W, 9	SW-W.
Do	do	do	39° 30 N.	59° 18 W.	31	8p, 31—	41	997.6	NW	NE, 6	NW	NW, 9	NE-NW.
Black Tern, Am. S. S.	Durban	Baltimore	30° 00 N.	58° 30 W.	31	10p, 31—	42	1,002.0	S	W, 8	NW	S, 10	S-NW.
<b>NORTH PACIFIC OCEAN</b>													
Huguenot, Am. S. S.	Portland, Oreg.	Long Beach, Calif.	41° 00 N.	124° 45 W.	130	9a, 1—	1	1,000.0	ESE	S, 9	S	S, 9	
Kahuku, Am. S. S.	Aberdeen, Wash.	Honolulu	43° 00 N.	132° 45 W.	131	4a, 1—	1	985.4	SE	SSW, 4	SE	SE, 9	SE-SW.
Geflon, Nor. M. S.	Esterio Bay	Yokohama	31° 42 N.	148° 52 W.	1	2a, 2—	2	988.3	W	WSW, 9	WNW	SW, 9	
Pres. Cleveland, Am. S. S.	Honolulu	San Francisco	26° 50 N.	147° 00 W.	2	2p, 2—	2	1,006.1	SW	S, 8	SW	S, 8	SSW-S-SW.
Mapele, Am. S. S.	Honolulu	Honolulu	40° 42 N.	137° 18 W.	2	4a, 3—	3	970.3	S	S, 8	SW	SSE, 10	S-W.
Kahuku, Am. S. S.	Aberdeen, Wash.	do	40° 40 N.	137° 00 W.	2	6a, 3—	3	984.1	ESE	SSE, 6	W	WNW, 9	SSE-WNW.
San Marcos, Am. S. S.	Olympia, Wash.	San Francisco	40° 45 N.	124° 50 W.	3	4p, 3—	3	1,002.4	SE	SE, 10	SSE	SE, 10	SE-S-SW.
Michigan, Am. S. S.	Moji	Portland, Oreg.	44° 47 N.	135° 12 W.	3	2p, 3—	4	979.0	SE	ESE, 2	W	WNW, 10	ESE-SE-WSW.
Republic, U. S. A. T.	Tacoma	Los Angeles	48° 12 N.	124° 54 W.	4	4a, 4—	4	997.6	E	E, 9	SW	E, 9	E-SE.
Makawao, Am. S. S.	Honolulu	Anacortes	31° 48 N.	146° 30 W.	5	4p, 5—	6	998.3	S	SSW, 9	WNW	W, 10	S-SW.
Nitiel Maru, Jap. M. S.	Yokohama	Los Angeles	34° 22 N.	173° 40 E.	5	3a, 6—	6	975.6	E	Var, 1	W	NW, 9	S-Var-NW.
Kahuku, Am. S. S.	Aberdeen, Wash.	Honolulu	35° 00 N.	144° 20 W.	5	2a, 6—	6	992.2	ESE	WNW, 6	W, 10	SW-W.	
Gertrude Maersk, Dan. M. S.	Yokohama	Los Angeles	39° 00 N.	129° 30 W.	6	2a, 7—	7	992.2	SE	SE, 6	SE	ESE, 8	
Montgomery, U. S. S.	On patrol out from San Francisco.		41° 24 N.	125° 18 W.	7	4a, 8—	7	997.0	SE	E, 7	SE	SE, 8	S-E.
Nonsuco, Phil. M. S.	Iloilo, P. I.	Los Angeles	33° 25 N.	162° 48 W.	7	4a, 8—	8	983.7	SE	Calm	SE	NE, 10	NE-SSE.
Memphis City, Am. S. S.	Balboa	Balboa	13° 54 N.	94° 18 W.	8	4p, 8—	8	1,013.2	NE	N, 7	N	N, 8	
Canton, Swed. M. S.	Bugo, P. I.	San Francisco	34° 49 N.	142° 21 W.	9	2p, 9—	9	1,000.0	NE	NNE, 9	N	NNE, 9	NE-N.
Bonneville, Nor. M. S.	Santa Cruz, P. I.	Los Angeles	32° 08 N.	154° 57 E.	8	8a, 11—	13	999.3	W	WNW, 10	WNW	WNW, 11	WNW-NW.
San Pedro Maru, Jap. M. S.	Yokohama	Yokohama	32° 20 N.	149° 28 E.	9	2a, 10—	11	1,001.4	W	W, 9	NW	W, 10	
Texas, Am. S. S.	Masinloc, P. I.	Los Angeles	32° 24 N.	179° 00 W.	12	Mdt, 12—	14	995.6	W	NNW	WNW	NNW, 11	
Steelmaker, Am. S. S.	Balboa	Balboa	15° 54 N.	97° 54 W.	14	6a, 14—	15	1,006.5	NE	NNW	N, 10		
Mauna Ala, Am. S. S.	Seattle	Honolulu	28° 24 N.	151° 48 W.	14	2p, 14—	15	1,000.3	SW	SSE, 6	W	SW, 8	SSE-W.
Texas, Am. S. S.	Masinloc, P. I.	Los Angeles	33° 00 N.	170° 07 W.	15	6a, 15—	15	994.2	W	SW, 6	W	W, 9	SSW-W.
Yomachichi, Am. M. S.	Keelung	do	35° 36 N.	144° 00 W.	15	2p, 15—	16	990.9	SE	S, 8	SSW	S, 9	SE-SSW.
H. D. Collier, Am. S. S.	Balboa	do	13° 15 N.	93° 00 W.	15	4p, 15—	16	1,011.2	NNW	NNE	NNE	NNE, 8	NNW-NNE.
Bridge, U. S. S.	Honolulu	San Francisco	31° 02 N.	137° 41 W.	15	7p, 15—	15	1,006.1	S	S, 8	S	S, 8	None.
Kaimoku, Am. S. S.	Seattle	do	39° 24 N.	140° 12 W.	15	2a, 16—	16	1,001.0	SE	SE, 8	S	SE, 8	
Jefferson Myers, Am. S. S.	Balboa	Los Angeles	15° 54 N.	94° 54 W.	16	4p, 16—	16	1,012.5	N	N, 7	NNE	NNE, 9	
Bonneville, Nor. M. S.	Santa Cruz, P. I.	do	31° 44 N.	175° 17 W.	16	4a, 17—	18	996.3	W	W, 11	W	W, 11	
Texas, Am. S. S.	Masinloc, P. I.	do	33° 48 N.	160° 30 W.	17	1p, 17—	18	994.6	WSW	SSW, 6	W	W, 9	SSW-SW.
Geflon, Nor. M. S.	Esterio Bay	Yokohama	30° 29 N.	152° 09 E.	18	2a, 18—	18	1,002.6	SW	WSW, 9	NW	WSW, 9	SW-WNW
Mindanao, Phil. S. S.	Los Angeles	do	34° 30 N.	173° 00 W.	17	Mdt, 18—	18	984.4	NW	SSE, 9	W	SSE, 9	
Bonneville, Nor. M. S.	Santa Cruz, P. I.	do	32° 30 N.	168° 14 W.	18	8p, 18—	21	985.4	SW	WNW, 7	WNW	WNW, 11	SSE-W.
Grete Maersk, Dan. M. S.	Yokohama	Yokohama	44° 30 N.	174° 00 E.	16	Mdt, 18—	19	983.9	NW	NNW, 7	NNW	NNW, 9	
Geflon, Nor. M. S.	Esterio Bay	Yokohama	33° 12 N.	144° 24 E.	19	4a, 20—	20	1,000.0	WNW	WNW, 9	NW	WNW, 9	
Kaimoku, Am. S. S.	Seattle	Honolulu	28° 50 N.	150° 20 W.	19	5a, 20—	21	988.8	SSW	SSW, 8	W	W, 10	SSW-W.
Texas, Am. S. S.	Masinloc, P. I.	Los Angeles	34° 18 N.	148° 00 W.	19	1p, 20—	21	979.7	SSE	WSW	SW, 10		
West Ira, Am. S. S.	Balboa	Balboa	15° 48 N.	93° 54 W.	20	6p, 20—	20	1,011.9	NNE	NE, 5	NE	NNW, 8	
Besholt, Nor. M. S.	Cebu, P. I.	Los Angeles	30° 18 N.	164° 18 E.	23	11a, 21—	23	998.0	SW	SW, 6	NNW, 8		
Ludington, U. S. A. T.	Balboa	San Francisco	14° 39 N.	96° 08 W.	23	10p, 23—	24	1,011.2	NNW	NNW, 9	NE	NE, 9	NNE-NE.
Oregonian, Am. S. S.	Los Angeles	do	13° 12 N.	91° 00 W.	24	6p, 23—	24	1,008.1	NNW	WSW, 2	NNE	NNW, 9	
Texas, Am. S. S.	Masinloc, P. I.	do	34° 36 N.	132° 18 W.	23	3a, 24—	24	1,003.4	S	S, 9	S	S, 9	
Hugenot, Am. S. S.	Portland, Oreg.	do	44° 00 N.	124° 54 W.	23	4p, 24—	25	1,004.7	E	SE, 8	S	SSE, 8	ESE-SSE.
Swiftsure Bank Lightship, U. S.	On station		48° 33 N.	120° 00 W.	24	—, 25—	26	1,010.5	ESE, 8	E, 9			
Amagisan Maru, Jap. M. S.	Yokohama	do	40° 30 N.	135° 06 W.	25	3p, 25—	26	967.1	E	SSE, 9	S	S, 10	E-S.
Huguenot, Am. S. S.	Portland, Oreg.	do	41° 18 N.	124° 52 W.	25	8p, 25—	26	1,002.7	SE	SE, 9	S	SE, 9	SE-S.
Vega, U. S. S.	Bremerton	San Francisco	46° 48 N.	124° 42 W.	25	4a, 26—	27	997.0	SE	SE, 7	SSE	S, 9	
Panaman, Am. S. S.	Balboa	San Diego	16° 36 N.	99° 48 W.	25	5p, 26—	25	1,011.9	W	W, 3	NNW, 8		
Makawao, Am. S. S.	Ahuikimi, T. H.	San Francisco	34° 24 N.	135° 06 W.	27	2p, 27—	27	996.6	SSE	S, 5	SSW	SSE, 9	SSE-S.
Black Condor, Am. S. S.	Balboa	Los Angeles	14° 12 N.	94° 30 W.	27	6p, 27—	28	1,014.6	N	N, 8	N	N, 10	N-NNE.
Matsonia, Am. S. S.	Honolulu	San Francisco	35° 14 N.	130° 40 W.	27	8p, 27—	28	1,003.1	S	SSW, 9	SW	SSW, 9	
Bridge, U. S. S.	Honolulu	San Francisco	26° 16 N.	149° 03 W.	28	1p, 28—	29	998.3	SSW	SSW, 9	W	SSW, 9	SSW-WNW.
Matsonia, Am. S. S.	do	23° 30 N.	150° 12 W.	28	5p, 28—	28	1,003.4	SSW	WSW, 7	NNW	WSW, 8	SSW-WNW.	
Bridge, U. S. S.	Matsonia, Am. S. S.	Honolulu	31° 12 N.	138° 23 W.	28	3a, 29—	29	992.9	SSE	WNW, 9	SW	SW, 9	
Bridge, U. S. S.	Honolulu	San Francisco	31° 30 N.	138° 30 W.	30	3p, 30—	31	1,004.1	W	W, 8	NW	W, 9	
Besholt, Nor. M. S.	Cebu, P. I.	Los Angeles	34° 30 N.	138° 48 W.	31	3p, 30—	31	997.3	NNW, 6	NNW, 6	NNW, 8	NNW, 8	None.

\* December.

\* Position approximate.

\* Barometer uncorrected.

\* February.